

Combat Crew

strategic air command



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FLARE Combat Crew

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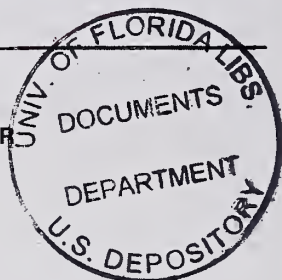
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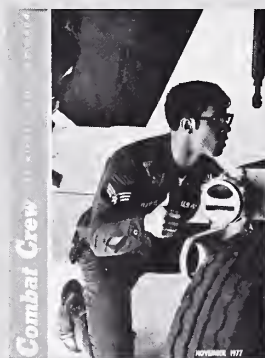
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ON OUR COVER

Sgt David L. Witte, 19th OMS, signals fellow weapons loading team-mates during the 1977 Munitions Loading Competition. For more on this story, see page 2.

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GIANT SWORD '77

The competition was going to be tough. That was the prediction prior to Giant Sword 77; and that was how it turned out. The overall winner was the 93 BMW from Castle. This year's win marked the third time during the last four years that Castle took top honors. With the competition as keen as it was, Castle didn't walk away from the competition without a struggle.

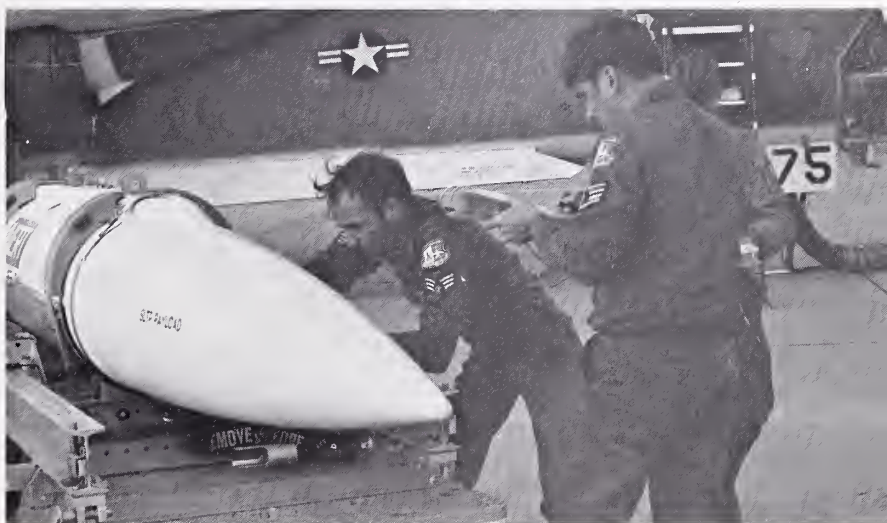
Lt Gen James E. Hill, vice commander in chief, SAC officially opened the 1977 edition of Giant Sword. In opening the eight-day event, he acknowledged the excellence of the competitors by saying, "I am very much aware today that I'm in the presence of the best munitions load teams, aircraft crew chiefs and security police teams in SAC. I can say this because of the achievements, which caused you to be chosen to compete here."

Chief Master Sergeant of the Air Force, Robert D. Gaylor, also spoke to the competitors during the opening ceremony. He concentrated his remarks on what he termed "the four C's to success." He indicated that competition is truly the American way, he cited, competition, capability, confidence and being a champion as the four C's to success. As always, Chief Gaylor kept the crowd in laughter especially when he asked, "Why didn't they have competitions like this when I was an SP"? The Chief, calling on his memory, said that the reason was that back then "bombs hadn't been invented yet."

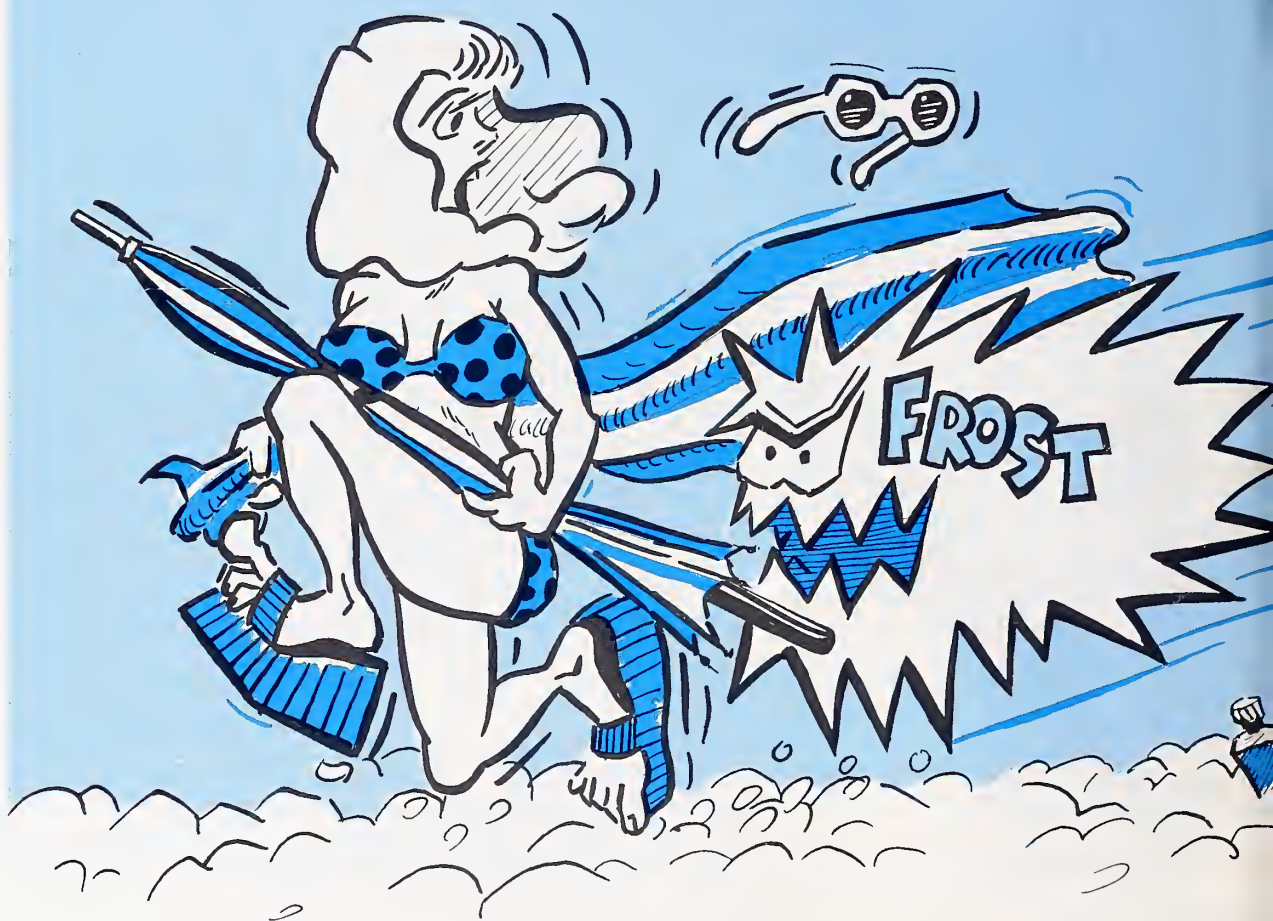
After the first day of competition, the race for the Barrentine Trophy showed Castle's 93d Bomb Wing, who amassed 246 out of a possible 250 points, to be the leader. Mather's 320th Bomb Wing and Minot's 5th Bomb Wing both totaled 240 points to tie for the second spot. Thirteen other units were within 21 points of Castle's leading score. When the 319th Munitions Maintenance Squadron (MMS)

Continued on page 16

COMBAT CREW



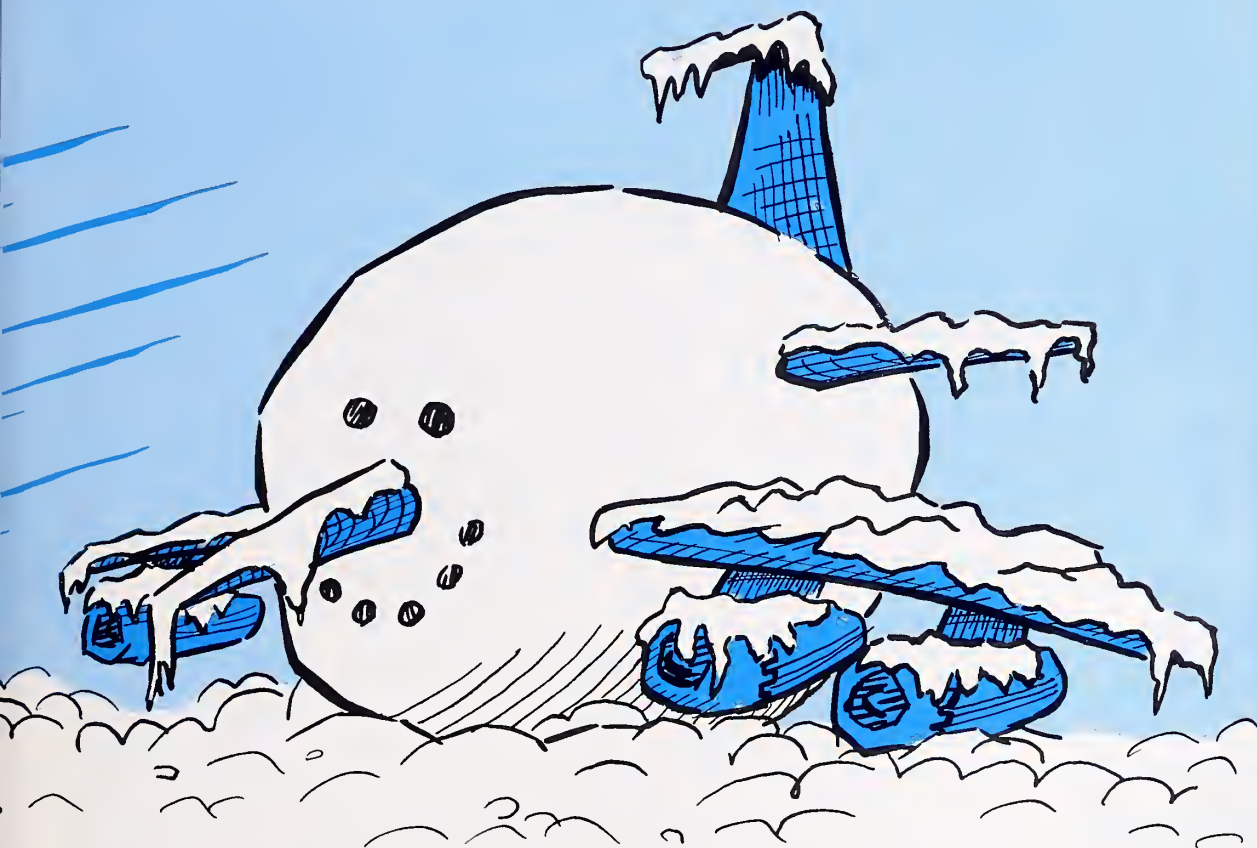
SUDDENLY IT'S



Must aircraft mishaps signal the beginning of winter weather hazards, or can we identify the hazards and take action to prevent mishaps from happening? It isn't so much that there will be new problems, it is just that the same old hazards that have always plagued us will be back when the winter wind blows. It is most unlikely that you can fly this winter without encountering most of them.

What are some of the factors that can overcome winter flying hazards? Quite obviously they could be aircrew training, discipline and experience. Air Force and SAC regulations have many guidelines for safe winter operations, but strict application of regulations alone will not guard you against all

WINTER!!



eventualities. This can only be done by practicing thorough flight planning and crew discipline and proper technique on each and every flight. In this way you will react with maximum efficiency when encountering strong wintry winds, obscured ceilings, rapid visibility deterioration, structural and induction icing, winter thunderstorms, and frontal turbulence.

The primary purpose here is to consider the recurring problems of winter flying and to review some of the basic rules that have been developed to help overcome the hazards of winter operations. The following suggestions can be used to avoid winter flying mishaps.

- Avoid flying into areas of freezing rain.
- Check most carefully with the forecaster when weather conditions are marginal.
- Obtain frequent enroute weather advisories.
- Make pilot reports whenever weather is noted to have deteriorated from that forecast.
- Write up all hazardous conditions. The next crew through may be able to use the information.
- Use all approach aids available.
- Expect winter weather problems. It's definitely that time of year again.

Continued on page 30

STEP ON THE BALL

Capt Steve Anderson
509 Bomb Wing, Pease AFB

The simulated three-engine instrument approach and missed approach which each aircraft commander must perform on his annual qualification check should, like any inflight maneuver, be thoroughly table-briefed prior to flight. Since any line AC can practice this maneuver in day VMC, weight and other restrictions permitting, this is an emergency for which we should all be well prepared. The demonstration of our proficiency should not cause any apprehension or confusion stemming from unfamiliarity. Although we should train for the emergency and not the evaluation, here are some tips on how to prepare for both situations.

Review SACM 51-135, Vol VI for weather criteria (the evaluator may have to be in the seat) and gross weight restrictions for simulated engine-out training. You should review the chart on A9-34 in the Appendix and, based on forecast weather, see if your predicted gross weight for the maneuver meets the restrictions. The manual also imposes a minimum of 300 feet above published field elevation for DH/MDA, on the simulated approach, for the initiation of the go-around.

Review the Engine Fire or Failure During Flight checklist with your copilot. Ensure that he understands each step. For the evaluation, don't fall into the trap of nonchalantly agreeing with his "tripping" of a non-existent number 4 generator control switch after simulated loss of number 4 engine. That'll cost you at least a beer and in a real situation, it could cost you a lot more.

Study the flight manual procedures for landing and go-around with one engine inoperative. Remember that you are restricted to a maximum of 40 degrees of flaps until the landing is assured. There is also a warning which reminds you to consider inflight minimum control speed (VMCA) among several other variables when selecting a pattern airspeed.

Make sure you and your copilot know the definition of inflight minimum control speed and its implications. You always compute VMCA for landing, and it is somewhere between 90-110 knots,

depending on atmospheric conditions. You should also, in the case of an engine out, be pessimistic and compute VMCA assuming the loss of a second engine. Don't shrug off this computation saying, "125 knots is about right" because it could be as high as 139 knots. Gross weight has no bearing on VMCA, only temperature and pressure altitude. The lower the temperature, the higher VMCA will be, because of the resultant greater thrust and asymmetry. For an evaluation, it might be wise to precompute VMCA on flight planning day, based on forecast temperature; it's a computed speed and will be checked like any other.

Put some thought into the type of approach you'll be flying. A precision approach requires fewer, smaller power changes than the non-precision which makes rudder coordination easier. You must also remember the flap selection and decision height restrictions. On both types of approach, "the necessity of early anticipation of additional power requirements" cannot be overemphasized. Contact your local training flight section for a discussion of fuel flow techniques.

Are you going to trim out the rudder pressures? If your engine failure occurred enroute, of course you would have. For the purpose of demonstration, you may want to trim out the rudder pressure on downwind. As a technique, a good place for your copilot to crank out your rudder trim might be just prior to glide path intercept or the FAF because, "... as thrust is decreased, trim will have to be decreased to compensate for reduction of the unequal thrust."

One of the objectives during the go-around is to maintain smooth aircraft control while improving the ability of the aircraft to accelerate and climb. For the demonstration, either an oral "go-around" or the advancement of power can indicate the point at which you initiated the missed approach. Apply only as much power as you need, at a rate commensurate with your ability to coordinate the increased rudder requirements. Keep the ball centered. Call for

flaps 30 as power is increased to reduce flap drag. As you improve your acceleration and climb capability, smoothly raise the pitch attitude for climb. Retracting the landing gear further reduces drag, and therefore reduces thrust requirements and asymmetry problems. Use all the rudder you need to keep the ball centered. If you run out of rudder, and the heading is wandering, you can use ailerons to raise the thrust deficient wing, and/or staggered throttles. The evaluator will probably return the failed engine to you after traffic pattern airspeed and altitude have been reached.

A few closing thoughts: Before you leave the ground on your annual qualifi-

cation check, you should discuss with your evaluator which of you will retard the throttle for the demonstration. Then when that engine fails, simulated or not, apply your priorities. The first thing that must be accomplished is FLY THE AIRPLANE. A lot of verbalizing gives a false sense of security here. When you are satisfied that you've got everything under control, do your critical action items and call for the appropriate checklist over interphone.

To tie everything together, let's summarize a simulated three-engine demonstration sequence, using a "Do . . . Say" format.

DO

- Insure that weather conditions, gross weight, and rate of climb are all favorable for simulated three-engine work . . . FLY THE AIRPLANE.
- Pull an outboard engine to idle . . . fly the airplane.
- Maintain control of the airplane. Trim it if you wish . . . FLY THE AIRPLANE.
- Monitor the checklist accomplishment . . . FLY THE AIRPLANE.
- Fly the airplane. Give the other pilot the controls while you brief, if you wish. Mentally check VMCA . . . FLY THE AIRPLANE.
- Fly the approach, taking the trim out on final . . . FLY THE AIRPLANE.
- At 300 feet above published field elevation or published DH/MDA (at map), whichever is higher, initiate the missed approach . . . FLY THE AIRPLANE.
- Fly THE AIRPLANE . . . and step on the ball!

SAY

- Notify the crew that you will be practicing emergency procedures.
- Nothing
- "Throttle-cutoff (unless needed); Fire switch-pull (if required); Engine Fire or Failure During Flight Checklist"
- Nothing
- "Traffic Pattern Checklist." Give required responses, then briefly review the approach, pointing out simulated 3-engine limitation.
- The usual coordination calls.
- "Go Around" or let the throttles do the talking.
- "Flaps 30 . . . Gear UP (or down)."



An approach to the ice covered runway

BLACK PEARL

Capt Bruce J. Savaglio
Capt Clifford B. Carter
24 SRS, Eielson AFB

Many SAC tanker crews who come to Eielson AFB for 30 days TDY also find themselves making an unexpected side trip to SAC's little known island hideaway amid two oceans. Known as the "Black Pearl of the Pacific" to some and as the "Rock" to many others, this small piece of lava at the tip of the Aleutians is known by all for its miserable weather. Weather and flying are inseparable partners everywhere, but nowhere so much as at Shemya AFB, Alaska. Nestled between the North Pacific and the Bering Sea, Shemya is not your typical island paradise. There are no palm trees, in fact, there are no trees of any variety. The beaches are white half the year, but it is certainly not sand. The girls are not in grass skirts, but they do wear mukluks and parkas. There is little blue sky and never a balmy breeze. The old saying is especially true at Shemya, "If you don't like

the weather, wait five minutes, it'll change." The change is usually for the worse.

In the midst of the changing weather, SAC 135s operate out of the "Rock" on a regular basis. KCs carrying spare parts, maintenance and support personnel, as well as RC-135 crews operate from Eielson to Shemya and return. If your crew is tasked for this mission, there are a few "Shemyaisms" which you may be able to use to handle the unpredictable Shemya weather. Although strong variable winds are common to all island locations, at Shemya it is not uncommon to have winds in excess of 40 knots for more than a week at a time. Combine the 60 plus inches of snow a year and the high winds and the result is that most of the time the snow falls horizontally. The snow removal crews have a Herculean task in keeping the runway

and taxi ways in operation.

In the summer time, and at Shemya that word is used in its loosest sense, the temperature seldom gets above 45 degrees and the winds continue to blow. Although the winds seldom exceed 40 knots in the summer months, the addition of fog and low ceilings during this time offers another challenge to safe flying operations. The month of July traditionally has 27 days when the ceiling is 200 feet or below and visibility is one-half mile or less. Three hundred feet and one mile are minimum conditions for Shemya operations. If the weather forecaster predicts a 30 knot wind and fog, believe him, it happens at the "Rock."

The single 9990 foot runway at Shemya seems to have a constant 90 degree crosswind built in. The maximum 20 knot crosswind component and minimum 9 RCR are established criteria to provide an added safety margin. There are no overruns and each end of the runway has its very own cliff. Landing hot or long is not recommended.

Detachment 1, 6th Strat Wing is the controlling SAC organization at Shemya. It is the detachment which has the responsibility to clear you for operations at Shemya. Their inputs have a large influence on the decision to launch you from Eielson or to put you on a weather hold. Once under the direction of the detachment you can expect to receive one of several options that are available. You could possibly be directed to hold at altitude, descend and hold at a lower altitude, commence an approach and expect a 15 DME vector to get you close for a quick approach. You could also receive clearance to fly the published approach if the weather is good. The last option is seldom used. If you reach your bingo fuel, and the Weather God still has not smiled on you, it's back to Eielson for another try at it later.

There is a bright side to a Shemya flight. Like . . . well . . . there's always

. . . The runway has been repaired since the last earthquake. By now, Shemya must sound like the end of the earth, unfit for man or plane. While the former may be true, remember that SAC aircrews have been safely operating out of Shemya for many years. The important thing to remember is to continue using the same standard procedures and good judgment that you would use when flying into any strange field. Good crew coordination is vital and complacency is the deadliest mistake. Flying into Shemya is no "piece of cake" and requires the complete attention of the entire crew. It could possibly challenge you and your crew's abilities to the limit. Keep that in mind. Give it your full attention and respect; follow and comply with the detachment's direction and Shemya will just be another "nice place to visit, but you wouldn't want to live there" place.

Part of the taxiways after the earthquake of '75.



confessions
of a (former)



We were standing in the left wheel well watching hydraulic fluid slowly drip from an actuator. The IP smiled. "That's a good catch for your first PUP ride." Secretly I was feeling proud of myself, because I spotted the problem before he did.

My instructor, who became a tanker IP before I was in junior high, sensed my overconfidence. "You'll be surprised at what you won't see. Besides, it's easy to do an exterior preflight on a warm day when you can take your time and enjoy the sunshine. The real test of your ability is when the weather is rotten. It's a lot harder to study the airplane at night, or when you're soaking wet, or when your toes are numb, but that's when you've really got to concentrate or you'll look right at a problem and not see it."

I should have written those words in my checklist, because a hasty night preflight in miserable weather led to my single-handedly closing a base for two hours. I also caused an FB-111 to be sent on an instant TDY from the IAF, two OPS sorties to be cancelled, and I gave an inbound tanker about three hours of holding pattern practice. (There is also a certain amount of embarrassment in shutting down engines on the runway and listening to obscene comments from 45 disgruntled PAX climbing down the ladder on their way to the bus parked next to the 1000 ft. marker.)

I felt like the captain of the Titanic. There was an iceberg out there that night, and I didn't see it until it was too late. It all began with my preflight.

It was bitterly cold that night, especially for a California boy. I had just landed a 185 thousand pound airplane on a runway with glare ice on the first and last thousand feet. The center portion was dry, so I really stood on the brakes to get it slowed down. The RCR was estimated at 04 on the taxiway and the parking area, and I had to use differential power for directional control, since nose wheel steering was a joke.

This was to be a short stop-over on my way to Europe. While my crew chiefs pumped the bird with fuel, I warmed my hands on a base ops cheeseburger. I figured that in two hours, I'd blast off and leave winter far behind. I guess I was a bit anxious.

The temperature was 7 degrees and Mother Nature added a 25 knot wind for my exterior preflight. I remember checking the struts for hydraulic leaks during my walk around, or should I say run around? Anyway, I didn't see anything wrong with the airplane, but my lack of thermal underwear made it hard to concentrate on anything other than self preservation.

My copilot and I finished the Interior Inspection Checklist in record time. We were waiting for the

boom to finish loading the PAX, when suddenly there was a loud thump that rocked the airplane. It was similar to the thump you feel when the dump switch is cycled and the boom is not fully retracted. I figured it was caused by the passengers running around. Besides, my fingers and toes were tingling, and I was anxious to crank engines and taxi.

It seemed to take quite a bit of throttle to get the airplane to leave the chocks, and the ride felt a little bumpy. I blamed that on the packed snow and ice. Because the taxiway was closed, the SOF decided it would be better if we followed him down the runway and turned around at the end so he could give us a quick look.

I made a left 180 degree turn to line up for takeoff. Suddenly, Foxtrot jumped out of his truck and ran under my right wing. I realized that a normal person with normal sensory neurons would not leave the comfort of a warm truck just to go sight seeing. I saw him shaking his head as he ran back to the truck. I got a funny feeling in my stomach.

Foxtrot told me that my outboard aft tire (no. 8) was completely destroyed. He said it looked like a car tire that had blown at 60 mph. In addition, the other tires on the right truck looked pretty bad. I knew I was in for a very long night.

Taxiing at that gross weight is strictly verboten. All I could do was shut down and wait for the myriad of maintenance people to rescue me. The tire shop was dazzled by what they saw, and had to replace three out of the four tires before the airplane could be moved. It took over two hours before they could move my crippled bird from the runway. As I sat in the left seat being helplessly towed out of the way, I tried to think of an excuse for the DO. I couldn't come up with one.

Now I know why the Dash One says avoid turns away from a flat aft outboard tire at gross weights above 250 thousand pounds. The wheels tend to self destruct.

It turned out that the anti-skid had failed upon landing causing flat spots on the tires on the right truck. Apparently, that thump we felt just prior to engine start was the number 8 tire when it blew. The other tires destroyed themselves as I taxied.

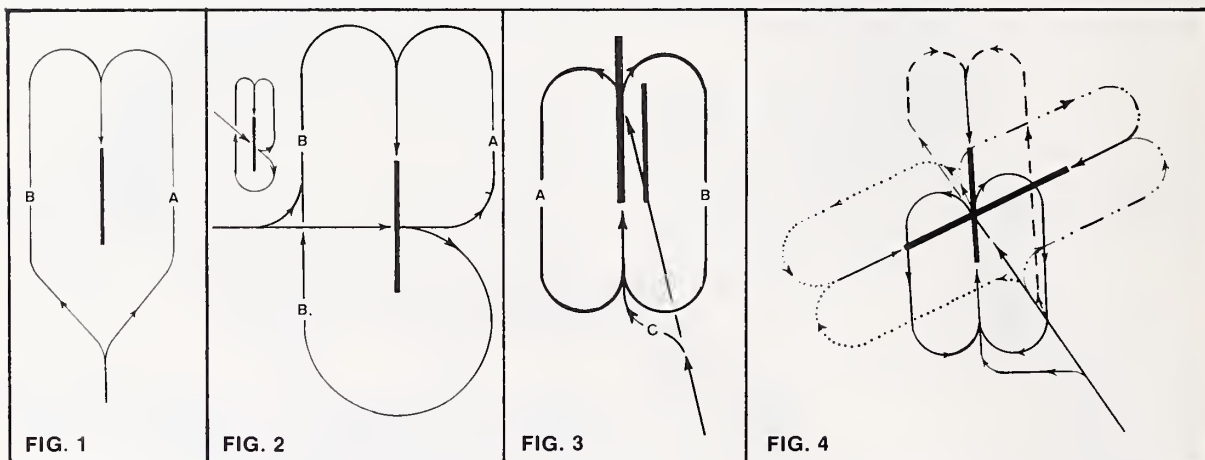
Page 5-25 of the KC-135 Dash One says that prior to every takeoff following a heavy braked landing or refused takeoff, a visual inspection of the tires must be made to determine if their condition is safe.

I keep thinking about my frigid preflight. Were those flat spots on the bottom where I couldn't see them, or was I so cold I didn't concentrate on my exterior inspection? Closing a runway is not one of the highlights of my career. I've made up my mind to always check the tires after landing, always check out things that go thump in the night, and always take my time on a preflight, no matter how rotten the weather.

BIG INSTRUMENT

CIRCLE TO LAND — PART II

Capt Lewis M. Hatch
1CEVG, Barksdale AFB



In “. . .”Circle to Land . . .” Part I, we reviewed the technical basics of circling approaches, including: circling radii, obstruction clearance, aircraft categories, and where to find the appropriate minima for the approach being flown. This month we will consider circling approach pattern options available to the pilot, ATC clearance for and restrictions upon these options and some techniques for determining proper downwind spacing.

CIRCLING PATTERNS

Disregarding any pattern restrictions imposed by ATC or the approach designers, the primary factor determining pattern options available to the pilot is the alignment of the final approach being flown with the landing runway. Each case will offer several possibilities. Figure 1 shows the options available when flying an approach to one runway and circling to land in the opposite direction. Figure 2 shows the possibilities presented when the extended final approach course crosses the runway. The inset depicts a case where the crossing angle is such that turning directly onto a downwind may be unfeasible. Figure 3 shows the possibilities presented when an approach is flown to one runway and the aircraft is to land on a parallel runway. Keep in mind that due to

the final approach offset from the landing runway, clearance for the approach may be issued as a circling clearance. This clearance does **not** preclude a simple turn onto a modified base and final (Track C). Figure 4 shows some of the myriad of possibilities available to a pilot from one approach at an airfield with multiple runways. Note that these options are a combination of the patterns shown in Figures 1, 2, and 3.

When the circling maneuver is not restricted by ATC, the published approach plate, or the IFR Enroute Supplement, AFM 51-37 allows the pilot to fly either left or right turns. The selection of the most desirable pattern is up to you. A major consideration in selecting the pattern you intend to fly is cockpit visibility. If the pilot in the left seat is to make the approach and circle, it would not make sense to select a maneuver that places the runway environment on the right side of the aircraft. Conversely, if your pattern is restricted to right turns, consideration should be given to having the pilot in the right seat fly the approach, since he has the best chance of maintaining visual contact with the airport environment throughout the maneuver. In Figures 1, 2, and 3, track A would be the most advan-

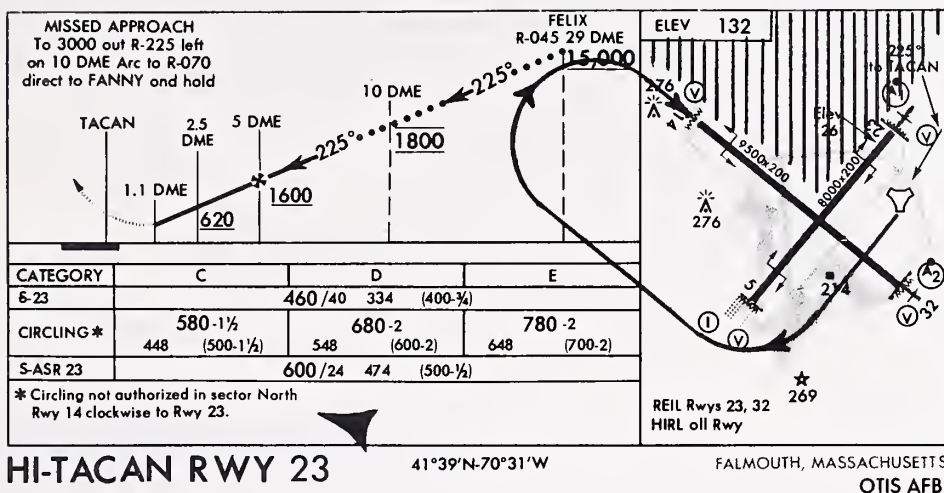


FIGURE 5

tageous when the pilot in the left seat is accomplishing the maneuver, and track B would be most suitable for the pilot in the right seat.

In any of these situations, the easiest way to visualize the maneuver and determine which pattern will be the most effective is to look at the aerodrome sketch on the approach plate. This sketch will, in most cases, show you the final approach course as it approaches the field as well as the runway layout (Figure 5). You may then determine the direction of all turns and note what the runway environment should look like as you fly the approach and circling maneuver.

Unfortunately, it is not always "dealer's choice" as to the pattern you will fly. The contents of your ATC clearance or published restrictions may remove some or all of your options.

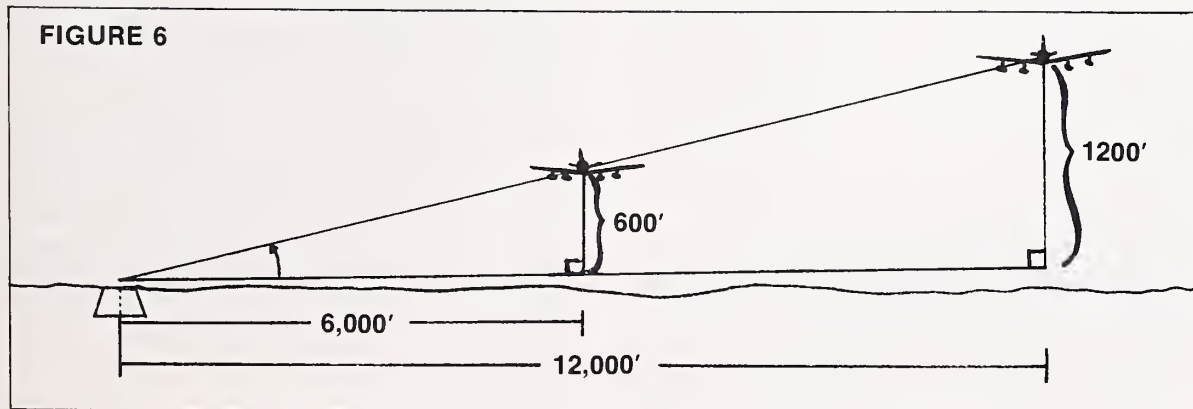
ATC CLEARANCES

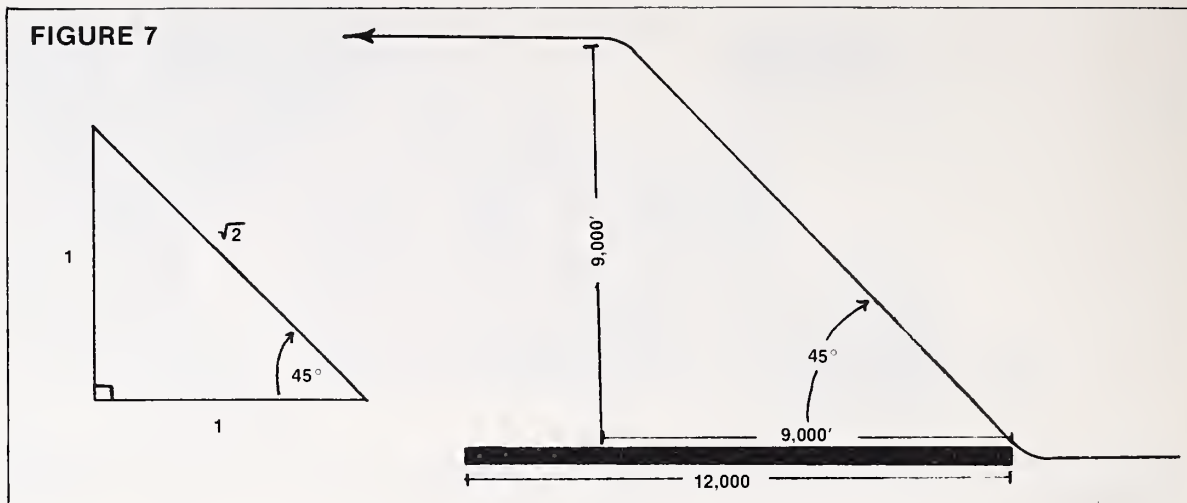
There are two general types of clearances that you may receive from ATC when flying a circling approach. The first, and most desirable to the pilot, does not restrict your circling options. It allows you to pick any one of the possible patterns. So pick the one that you would most like to fly. This clearance

would read: "Circle to Runway 18." Using Figure 1 as an example, you would be cleared to fly either track A or track B, at your option.

The second clearance restricts your pattern and may result in only one possible pattern. The general format of this clearance reads: "Circle (**direction using eight cardinal compass points**) of the (**airport/runway**) for a (**left/right**) (**base/downwind**) to runway _____." Whether the controller uses airport or runway, or base or downwind makes no difference. They all mean the same thing. The important points are the direction (side of the airport you will maneuver on) and the direction of turns from base/downwind. The direction of turns describes how you must turn to arrive on final. Thus, a "right downwind/base" indicates that you will have to turn right to arrive on final approach. Using Figure 1 as an example again, here is your clearance: "Circle west of the airport for a right downwind to runway 18." You may now fly only pattern B. All maneuvering is done on the west side of the field and turns to base and final will be to the right.

ATC controllers will not arbitrarily restrict your maneuvers. If they issue a restrictive clearance it is for some reason, normally for noise abatement over





an inhabited area. These restrictions are usually reflected in the IFR Enroute Supplement and the published approach plates for the field.

PUBLISHED RESTRICTIONS

The restrictions published in the IFR Supplement or on the published approach plate usually appear as a prohibition. That is, they tell you where you may not circle. Normally, they specify a direction from the field. They may, however, get somewhat more complicated (Figure 5). Again, use of the approach aerodrome sketch can be of great assistance in determining the type of patterns available. The approach shown to Otis AFB, if circling to runway 14, will require right turns to final. You may not maneuver in the hatched area because of the depicted restriction, caused by a restricted area north of the field. In this case, you should consider having the pilot in the right seat fly the maneuver.

DOWNWIND SPACING

Except in those cases where a pilot is able to maneuver from the instrument final approach directly onto a base leg or visual final approach, circling approaches will involve flying a downwind leg. A common tendency is to establish the downwind leg too close to the runway. This usually results when a pilot attempts to use the same visual references for his downwind leg at circling altitude as he would on a normal visual downwind flown at a significantly higher altitude.

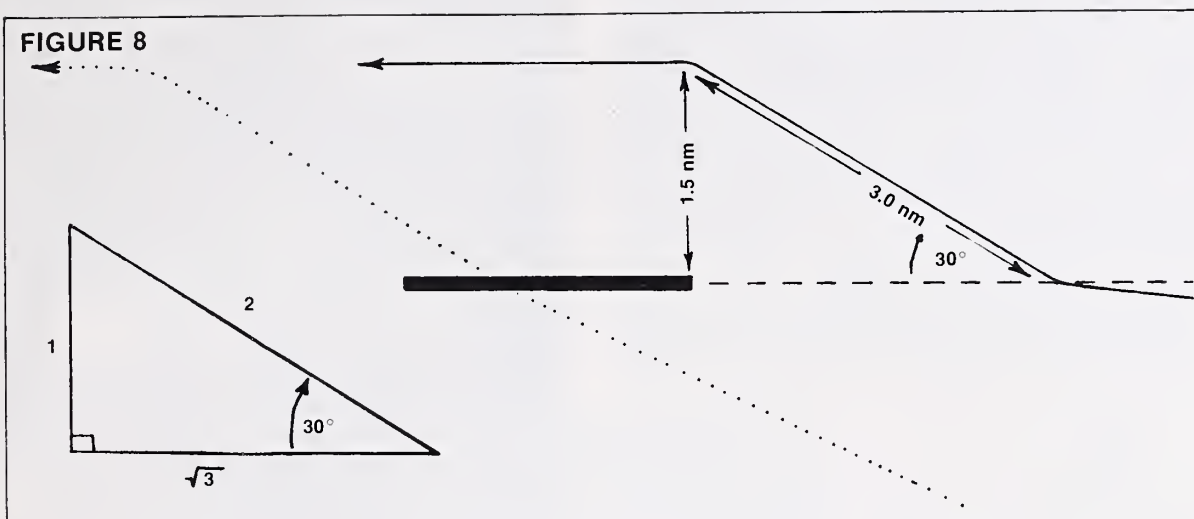
To see why this occurs, let's assume that a pilot's normal VFR traffic pattern altitude is 1200 feet above the ground and that his downwind is usually 2NM from the runway. His visual cues for downwind spacing are based on the runway's position in his window/canopy. If he attempts to fly the same

visual picture on a circling approach with an HAA of 600 feet, he will only be 1NM from the runway (Figure 6). If he is maneuvering at 150 KTAS, a continuous 180° turn at 30° of bank will result in overshooting final by 1200 feet. The question is where do we wish to place our downwind and how do we establish that downwind when there are no visual aids (two mile road, house, tower, etc.)?

There are two primary considerations for determining where to place the downwind leg. These considerations determine limits on how close to the runway or how far from the runway the downwind may be and still permit an effective approach. The limit on how far the downwind may be from the airport is a function of the existing visibility. If the visibility is 2 statute miles, placing the downwind outside of this distance will cause the pilot to lose sight of the airport. On the other hand, placing the downwind too close to the runway will result in an overshoot when turning to final approach. Determining how close is too close requires the pilot to compute his turn diameter.

There are several methods of determining the turn diameter. The turning performance chart on page 7-15 of AFM 51-37 is the most accurate. There are some rules of thumb that may be applied, however, with acceptable accuracy. For a 30° bank turn the turning radius may be determined by the formula: $TR = \text{nautical miles per minute} - 2$ (nm/min - 2). At 150 knots the radius would be .5 nm so the diameter would be 1.0 nm. Using the chart in AFM 51-37, we find that the actual radius is 3600 feet and the diameter would be 7200 feet. For a standard rate turn (3°/sec) the turn radius is determined by the formula:

$$TR = \frac{1\% \text{ of GS}}{2}$$



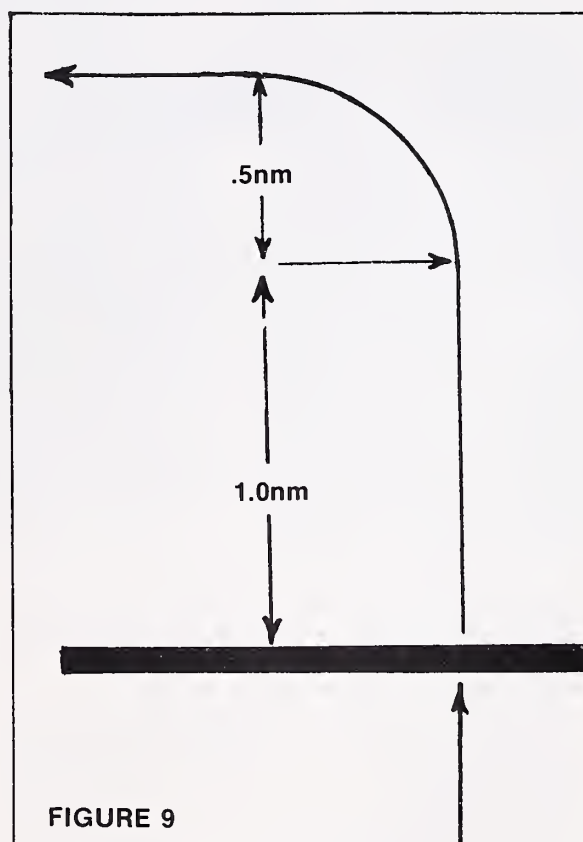
Once again at 150 knots and standard rate (24° bank) the radius would be .75 nm. The diameter of turn would be 1.5 nm.

Now that we have determined a minimum and maximum distance from the runway, pick something in between and fly it. But how do we establish a 1.5 nm downwind at a strange field with no known landmarks? That depends on the kind of pattern being flown. We will discuss three techniques that may be used in most circumstances.

Where you are able to cross the end of the landing runway at a 45° angle, your distance down the runway and your offset from the runway will be the same. This is estimated visually. (Figure 7) If we are landing on a 12,000-foot runway and we wish to offset 1.5 nm (9,000 feet), we will cross the end of the runway at a 45° angle, fly until we are abeam a point three quarters of the way down the runway, and then parallel the runway.

What can you do if you are unable to cross the end of the runway or must circle before arriving there? There is another method that may be used whenever you are able to cross the runway or the extended runway centerline. This method involves establishing a 30° angle from the runway and timing (Figure 8). If you wish to offset 1.5 nm, you must fly 3 nm on that heading after crossing the extended runway centerline. At 150 knots, you would fly for 1 minute 12 seconds to offset the downwind.

The last technique we will discuss may be used when crossing a runway at an almost perpendicular angle. In this case, we will use our turn radius and timing to establish the offset. At 150 knots and 30° bank our turn radius is approximately .5 nm. Since we want to establish a 1.5 nm offset we should fly for one mile after crossing the runway and then turn 90° to downwind (Figure 9). At 2.5 nm/minute we



should time for $2/5$ minute or 24 seconds before starting our turn.

These techniques will assist you in establishing a proper downwind. Now all you have to do is fly the approach. Next month, we will be concerned with some techniques that may be applied when actually flying the approach. We will also try to take some of the mystery out of missed approaches from a circling maneuver.

GIANT SWORD '77

Continued from page 2

Uploading Crew completed their B-52 load during the first day of competition, they scored a perfect 6 double 0. The perfect score was achieved in uploading a PWU-6A/C clip-in assembly.

Last year Ellsworth's 28th MMS scored a 600 point total in the first round. This year they did it again. For the second year in a row, Ellsworth's 28th MMS uploading crew scored a perfect 600. They turned in the flawless performance when they loaded the Short Range Attack Missile (SRAM) into a B-52H.

CMSgt Philip W. Fisher, a member of Munitions Evaluation Scoring Committee, indicated that the crews participating in Giant Sword this year were better prepared and more efficient at their tasks than when he was a participant in 1975.

"The competition is running smoother and is generating lots of excitement. I noticed that the equipment inspection scores are the highest they've ever been," the chief said.

This year eight teams got perfect scores on the munitions equipment inspections, and it's the first time more than one team received a perfect score in the event.

The commander in chief, SAC, General Richard H. Ellis, had a chance to visit the Giant Sword competition. Although he was at the competition for only a short time, he did get a chance to observe a 96 BMW upload and a security police exercise performed by the 4th Security Police Squadron (TAC).

He briefly met with the teams from Ellsworth,



Giant Sword Action Photos

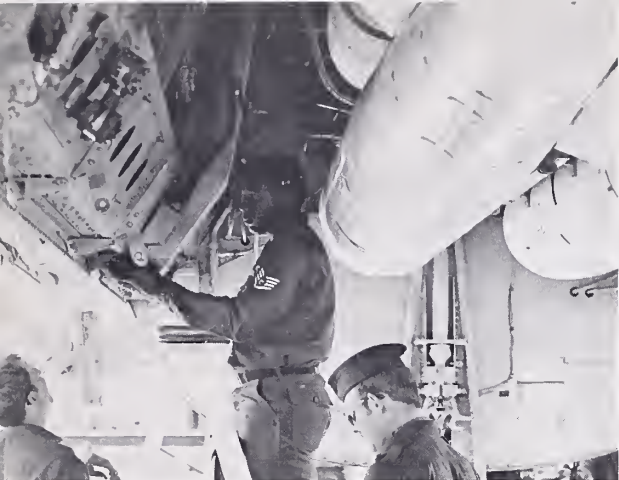
Castle, Robins and Grand Forks. Of course all four teams promised they would be the "best in SAC" during the closing ceremonies.

General Ellis was impressed with the enthusiasm and motivation of the competitors, and was very interested in the training of the competitors and how much crossfeed went on between the teams.

He felt the competition was going well and left the competitors with the statement, "good luck and press on."

Among those accompanying General Ellis were Col William R. Brooksher, the chief of security police for SAC and the honorable Art LaCroix, mayor of Rapid City.

After the release of crew chief scores for the first round of loading, it was apparent that the competi-



tion for the Best Crew Chief title would go down to the wire. Scoring the perfect 40 point first rounds were: Sr Amn Keith D. Rappleyea of Minot's 5th OMS, SSgt John C. Angiolillo of March's 22d OMS, Sgt William D. Benzick of Seymour Johnson's 68th OMS and SSgt Leslie E. Russell of Pease's 509th OMS.

The second round of Giant Sword 77 got underway in a big way for the 2d Munitions Maintenance Squadron from Barksdale; they posted a perfect 600 point score. Team Chief SSgt Larry F. Skarda was aided by teammates Sgt Frederick N. Faulk, A1C Ronald T. Evans, A1C Kim W. Hills, and A1C Steve W. Googhegan uploaded a SRAM into a B-52G. The Crew Chief scoring during the second round saw ten crew chiefs score a perfect mark of 40.

For Minot's Sgt Keith D. Rappleyea and Seymour Johnson's SSgt William D. Benzick, it was their second mark of 40, as both posted one in the first round.

Plattsburgh's 380th MMS was called upon to upload a SRAM. As team chief SSgt Richard H. Foster, and his crew of Sgt Glenn J. Murray, Sgt Dennis B. Verkest, Sgt Douglas M. Stewart, and Sgt Richard J. Cummings walked out to the FB-111, the pressure of maintaining first place and the possibility of capturing the Barrentine Memorial Trophy were on the line. When it was all over and the aircraft loaded, the evaluators walked away without comment.

While Plattsburgh waited, the second place team Grand Forks 319th MMS was called into action.



Lt Col John L. Haley III
SAC Giant Sword Project Officer
Hq SAC LGWM

ELLSWORTH — A WINNER

Day to day operations of the 44 SMW, 28 BMW, and 44 CSG are more than enough to fully occupy the people assigned to Ellsworth AFB. Normally, a SAC base has only one operational wing assigned, however, there are three dual wing bases in SAC and Ellsworth is one of them.

Each year, in addition to their normally heavy work, Ellsworth hosts the SAC Munitions Loading Competition: Giant Sword.

In mid September, 14 men (munitions, security police, aircraft crew chiefs) from each of SAC's bomber wings meet to compete for the title Best Munitions Competition Team in SAC. They load bombers under rigid time lines, fire M-16s for score, take written evaluations and respond to realistically

Team Chief SSgt Michael D. O'Neill, assembled his team of SSgt Robert J. Mason, Sgt Larry J. Burkhardt, Sr Amn Richard W. Scott, and Sgt Roger F. Wood in front of the B-52H, where they would load the SRAM missiles.

When the scores were announced, there was jubilation from both units, as each team had achieved a perfect score of 600 points.

For the Grand Forks squad, it marked the second time in the 77 competition, they had amassed 600 points, giving them two perfect rounds, the first time in Giant Sword history.

The Results

Castle won the Barrentine Trophy and was the overall victor at the 77 Giant Sword Competition.

This year only six points separated Castle's munitions competition team and the fourth place team, the 7th BMW from Carswell, last year's Giant Sword winner.

Finishing second and third in the competition were the 319th BMW, Grand Forks and the 380th BMW, Plattsburgh.

This year's competition was marked by high scoring. The munitions loading team from Grand Forks set a Giant Sword record of two perfect load scores. Also posting perfect scores were the loading teams from the 2d BMW, Barksdale, 28th BMW, Ellsworth, and the 380th BMW.

staged security problems (penetrations, terrorist threats etc). In short, they skillfully demonstrate the necessary elements required to provide security for our strategic bomber forces and to load those SAC bombers for EWO missions.

The competition lasts 10 days including the day of arrival and a day for the departure of 280 competitors and their loading equipment. Headquarters SAC MSET evaluators, munitions and security police staff, numbered air force staff and numerous distinguished visitors increase the number of people to be supported to about 400.

People at Ellsworth must start actual preparations at least 60 days before the competition and these activities are not completed until the final report is dispatched on 1 December. Almost every activity and skill at Ellsworth is involved in the preparations. The 44 Security Police Squadron and 28 MMS must provide vehicles, equipment and men

Fourteen munitions loading team crew chiefs had perfect scores in the competition, while eight units had perfect equipment inspections. Two security policemen had perfect scores in the shooting portion of Giant Sword.

1977 GIANT SWORD WINNERS

Best Munitions Competition Team — 93d BW, Castle AFB

Best Munitions Load Crew — 7th MMS, Carswell AFB

Best Security Police Unit — 379th Security Police Squadron, Wurtsmith AFB.

Best Aircraft Crew Chief — Sgt Keith D. Rapleyea, 5th OMS, Minot AFB.

Best Munitions Loads — 319th MMS, Grand Forks AFB

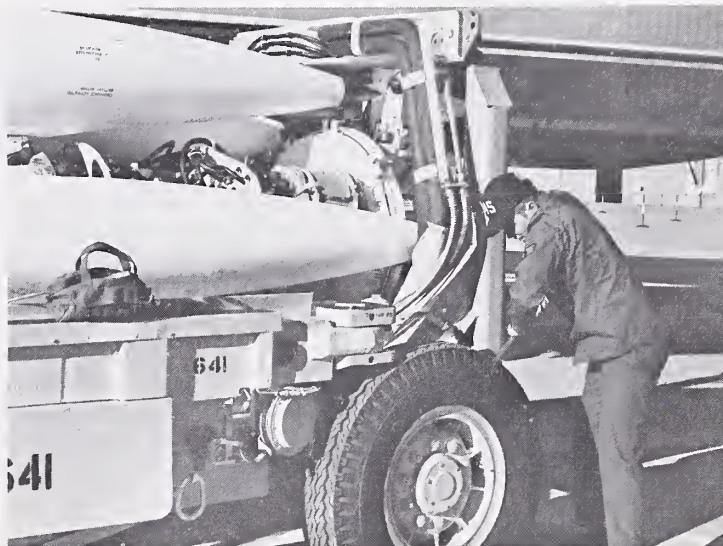
Best FB-111 Load — 380th MMS, Plattsburgh AFB.

Best Short Range Attack Missile Load — 319th MMS, Grand Forks AFB.

Best Security Police Academic Excellence — 93d SPS, Castle AFB.

Best Security Police Marksmanship — 93d SPS, Castle AFB.

Best Security Police Practice Exercise — 379th SPS, Wurtsmith AFB.

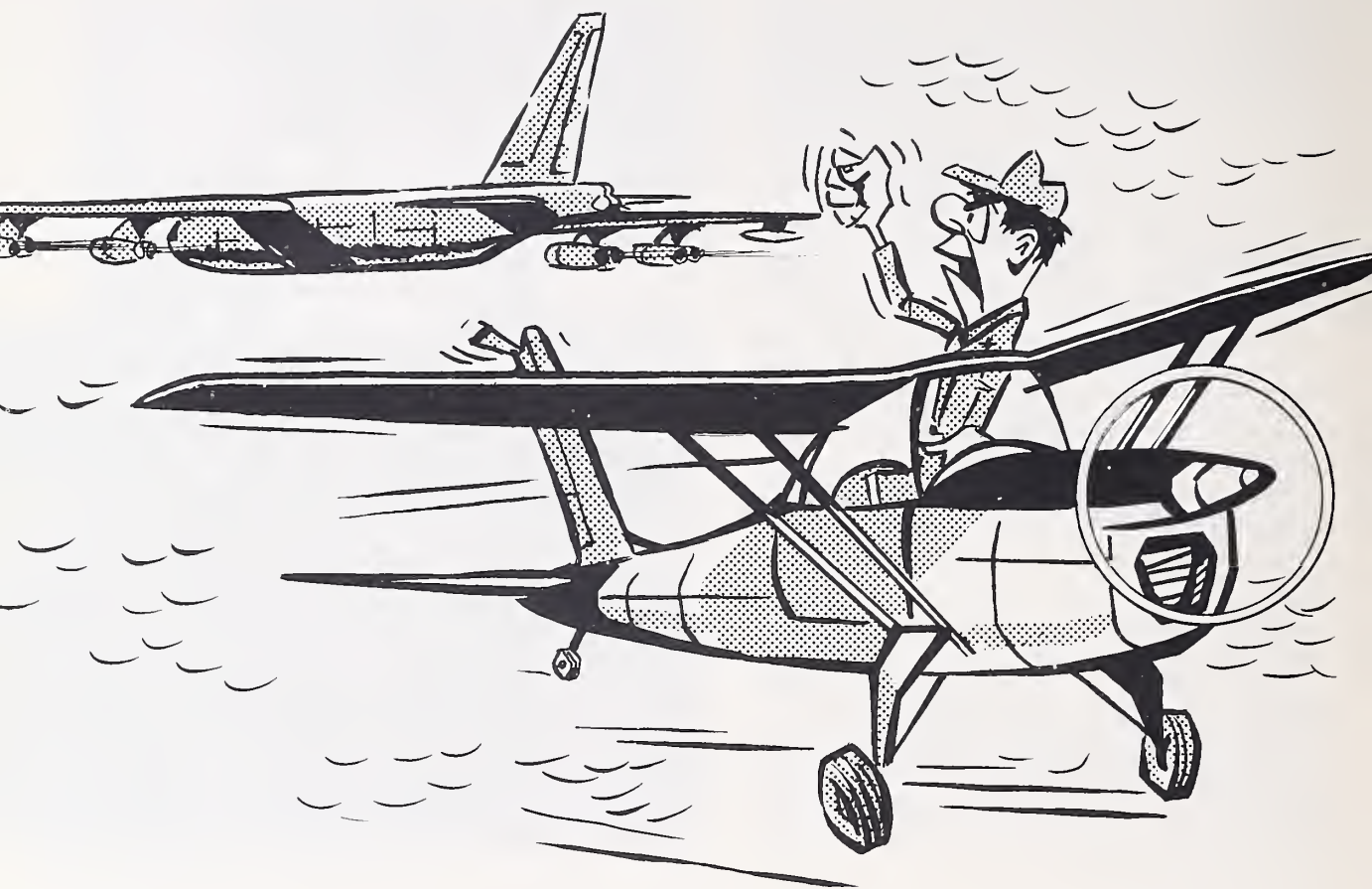


for Giant Sword as well as train their own competition team. The civil engineers must polish the base facilities, upgrade the firing range and make ready the competition hangar.

The people in the communications field must provide for daily priority message traffic concerning scores and pertinent Giant Sword directions. Temporary phones must be installed for media and staff use. The base billeting office must arrange and contract for housing on short notice and in large quantities. Transportation personnel must provide, schedule and maintain both rental and government vehicles during the competition. A 500-person sit-down awards dinner must be arranged. Planning and scripts for the opening and closing ceremonies must be provided. A protocol section is created and staffed by base volunteers to provide for distinguished visitors who can include the commander in chief of SAC, air division and wing commanders.

The 28 BMW provides competition loading aircraft, receives and dispatches the competitor airlift aircraft and DV aircraft as well as provide clean hangars for indoor loadings. The 28 BMW also provides all ground support equipment. Base weather maintains hourly, or minute by minute if required, observations during the competition. The base information office covers the competition, and provides daily Giant Sword newspapers. By the way, did I say that they do all of this and their normal assigned duties? Yes, I did.

Because of the enthusiastic and comprehensive support that the people at Ellsworth provide, Giant Sword 1977 was flawless and the competition a magnificent success. The competitors were all winners, the Best of the Best. The host, Ellsworth AFB, backed them up with the same enthusiasm and professionalism. Thank you Ellsworth. You're a Giant Sword winner.



On a clear day . . .

IT'S HARD TO SEE A B-52

At a recent meeting on collision avoidance at SAC Headquarters, the subject of near misses between SAC bombers and light civilian aircraft was discussed. The point was made by SAC representatives that in all known cases of near misses on Olive Branch routes, it has been the SAC bomber that saw and avoided the other aircraft, and that the light aircraft took no evasive action and presumably did not see the B-52. The inference was that the SAC crew was alert, the light aircraft pilot was not, and that visual scanning for other aircraft should be emphasized more in civilian flight training.

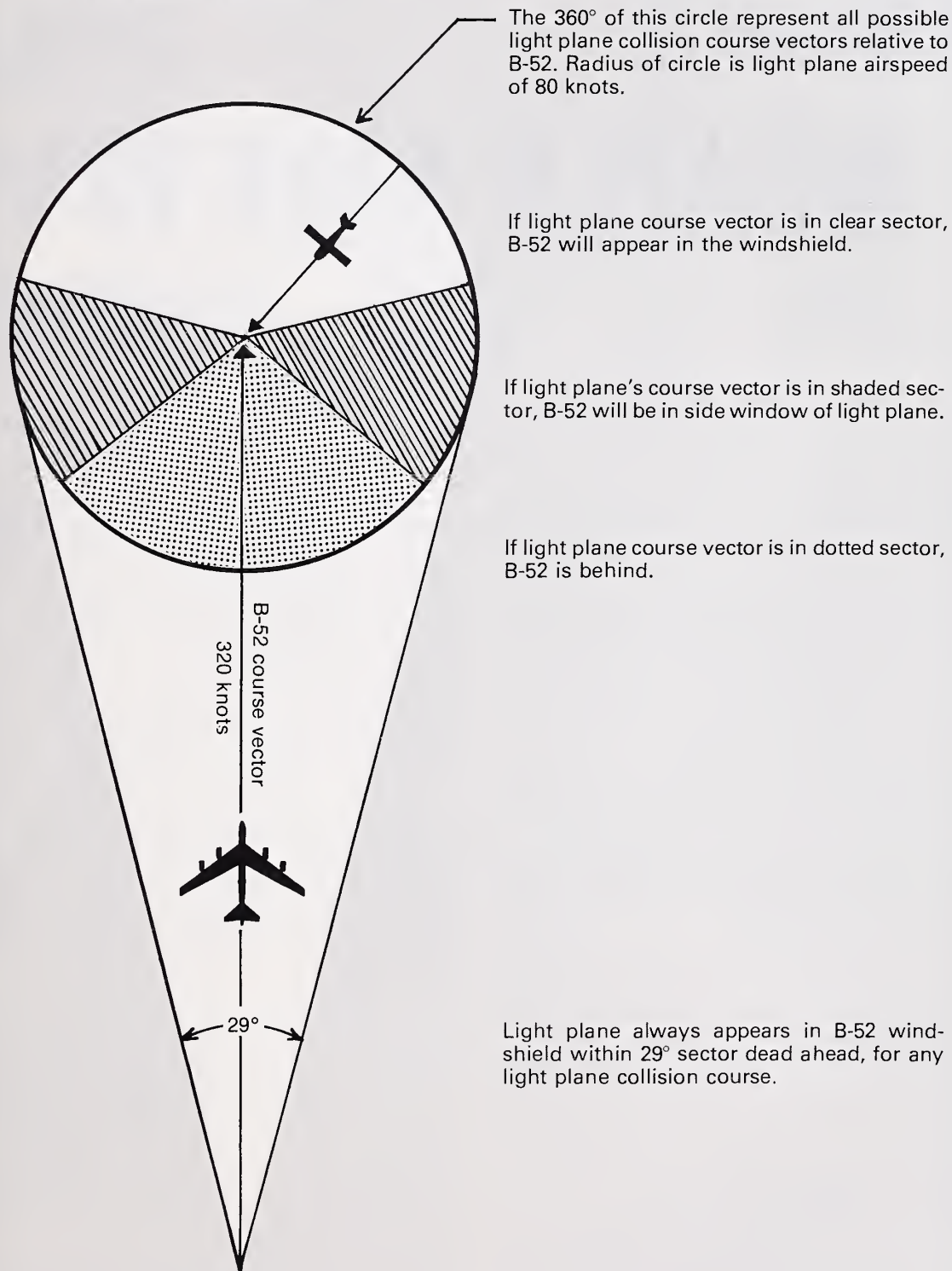
However, in cases of aircraft on collision courses, the greater opportunity to see and avoid always lies with the faster aircraft. Given: a B-52 on a low level run at 320 knots and a light plane at the same altitude on a collision course at 80 knots. In all the

possible relative headings of one aircraft to the other, the light plane will appear in the B-52 windshield within $\pm 14.5^\circ$ of dead ahead.

Yet the B-52 will only show up in the light plane's windshield in 40.3% of the cases, will show in the light plane's side windows in 33.3% of the cases, and will be behind in the remaining 26.4% of the cases. This is making the simplistic assumption, for the point of illustration, that the windshield covers $+60^\circ$ of dead ahead, that the side windows cover within $\pm 30^\circ$ of the wing tips, and that within $+60^\circ$ of the tail is "behind" the aircraft.

Clearly the greater opportunity to see and avoid the other aircraft lies with the faster aircraft. An alert light plane pilot scanning 100% of his windshield continuously will never see the faster B-52 on 60% of the possible collision courses.

Geometry of Collision Courses (with large speed difference)



An Element of

MISSILE SAFETY

1Lt Kenneth R. Schubert
381 SMW, McConnell AFB

SAC's Missile Potential Hazard Team (MPHT) consists of individuals best qualified to furnish technical advice and recommend actions to prevent or minimize equipment damage, personnel injury and correct hazardous situations.

Team members are experts in particular aspects of missile operations. Representatives from the various wing organizations serve on the MPHT and provide technical advice relating to specific problems which may be encountered during the time between when a hazard is reported and when it is eliminated. Especially important is the wing safety office. The safety representative, an integral part of the MPHT, helps determine the course of action to be taken by interpreting inputs from the combat crew and other sources. He is invaluable in helping determine the extent of assistance necessary to aid the missile combat crew eliminate the hazard.

Although specific circumstances and local directives may dictate different actions, the following is a realistic sequence of events in response to a missile potential hazard situation.

The missile combat crew on duty makes the MPHT aware that a missile potential hazard (MPH) exists. The crew can identify an MPH by visual or audible alarm indications in the control center or by other personnel reporting indications of a hazard to the crew. The crew then reports the situation to the wing command post (WCP) controller, who notifies the wing commander and the standardization duty crew. The standardization duty crew reports to the WCP to await the remaining MPHT members.

The missile combat crew uses the applicable technical orders and checklists and makes a followup call to the MPHT to apprise the team of the situation, give pertinent weather data, numbers and location of personnel on the complex, and actions taken

prior to the time the call is made.

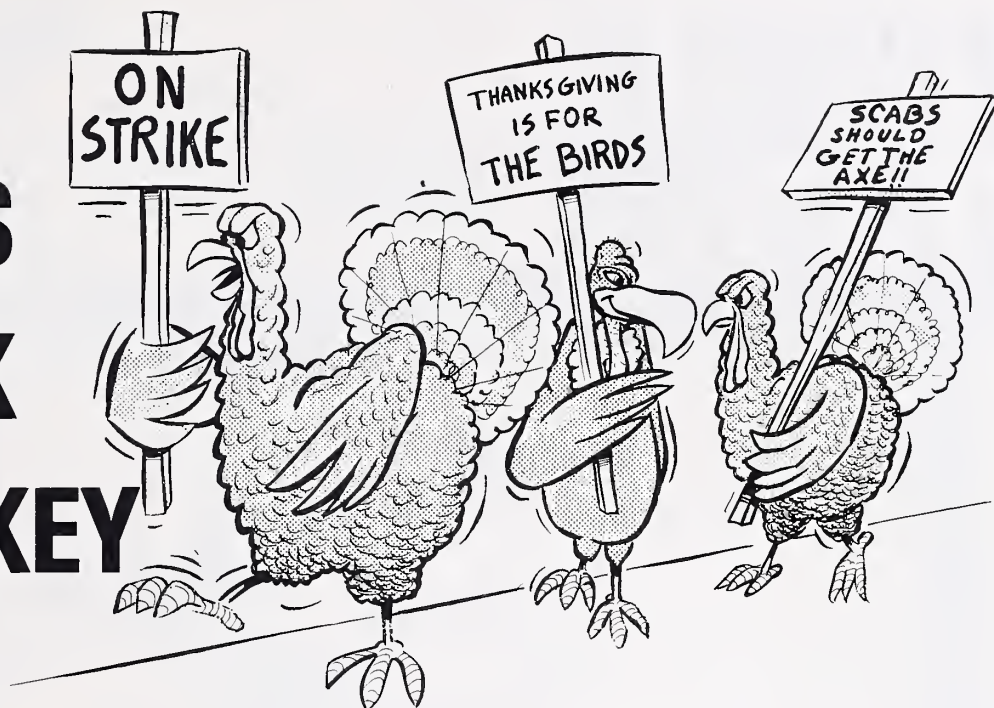
Primary consideration is given to safety of personnel and safeguarding equipment. The missile combat crews are trained and highly skilled in utilizing the required technical orders and checklists to prevent injury to personnel or damage to equipment. All personnel are evacuated to a safe location and operations and maintenance tasks in progress are safed. The crew then determines the extent of the hazard and, with advice from the MPHT, takes necessary actions to eliminate the hazard. The crew awaits base assistance — if necessary. Both the crew and technical experts at the support base are well aware of the safety precautions necessary to protect the missile complex and personnel from damage or injury. Like a well oiled machine, they quickly react to all hazard indications and make quick, reliable judgments to insure that all safety precautions are adhered to and that necessary actions are taken.

The MPHT team chief, utilizing the technical assistance of the MPHT members, must assess the situation and take the necessary action to alert or assemble the Disaster Control Team. Should an actual hazard exist, the base weather service will compute the hazard corridor and civilians residing within the hazardous corridor will be evacuated to safe locations.

The standardization duty crew, by direction of the wing commander, may be dispatched to the WCP when there is evidence that a malfunction exists in the hazard sensing equipment at the complex. By utilizing the indications and information provided by the missile crew, the standardization duty crew can aid in determining the necessary action to take. Once it has been determined that no hazard exists, the wing commander directs termination of MPHT actions.

Whether a real hazard exists or the hazard sensing equipment is malfunctioning, the MPHT is always ready to react when necessary. In the missile business you can never be too safe.

LET'S TALK TURKEY



We're not talking about that savory Thanksgiving bird. No, we're talking about those two other uglies: the Turkey and Black Vulture. Common throughout the United States, the Turkey Vulture is found mostly in the Southwest in the winter. The Black Vulture has a more limited range, however, and is found only in southern and southeastern states. The fall migration of the Turkey Vulture occurs from Montana, south through Wyoming, Utah, Colorado, Arizona and New Mexico. Some of these birds weigh from six to eight pounds and have a wing span up to 72 inches.

A review of bird strike data since 1970 shows the loss of an F-111 following a windscreen vulture strike. In that case, the crewmembers ejected safely. Also, a T-37 IP was killed instantly when a vulture penetrated the aircraft windscreen. Eight bird strikes in 1976 where vultures were identified resulted in damage costs greater than \$10,000. Most strikes occur during low level operations.

Even though migrating flocks usually are small and rarely exceed 25 to 30 birds, strikes have occurred in a wide area: New Mexico, South Dakota, Michigan, Georgia, Florida and Mississippi.

A late riser, the vulture is seldom seen in flight until two hours after sunrise. Most flying occurs in the warm air currents of midday and the birds usually return to roost two hours before sunset.

Vultures can be found in hilly country, on up-slopes on the leeward side of cliffs, near frontal systems, and near thermal air masses often identified by the formation of cumulus clouds. Terrain and weather conditions play a key role in their

flight. Thermal and frontal air mass uplifts will attract the birds and allow them to sustain flight by soaring.

They feed on carrion and can sometimes be found near dead animals. They circle the food source, attracting other vultures. Several hundred birds can be attracted to a single area. On one occasion, 47 birds were observed near one dead snake.

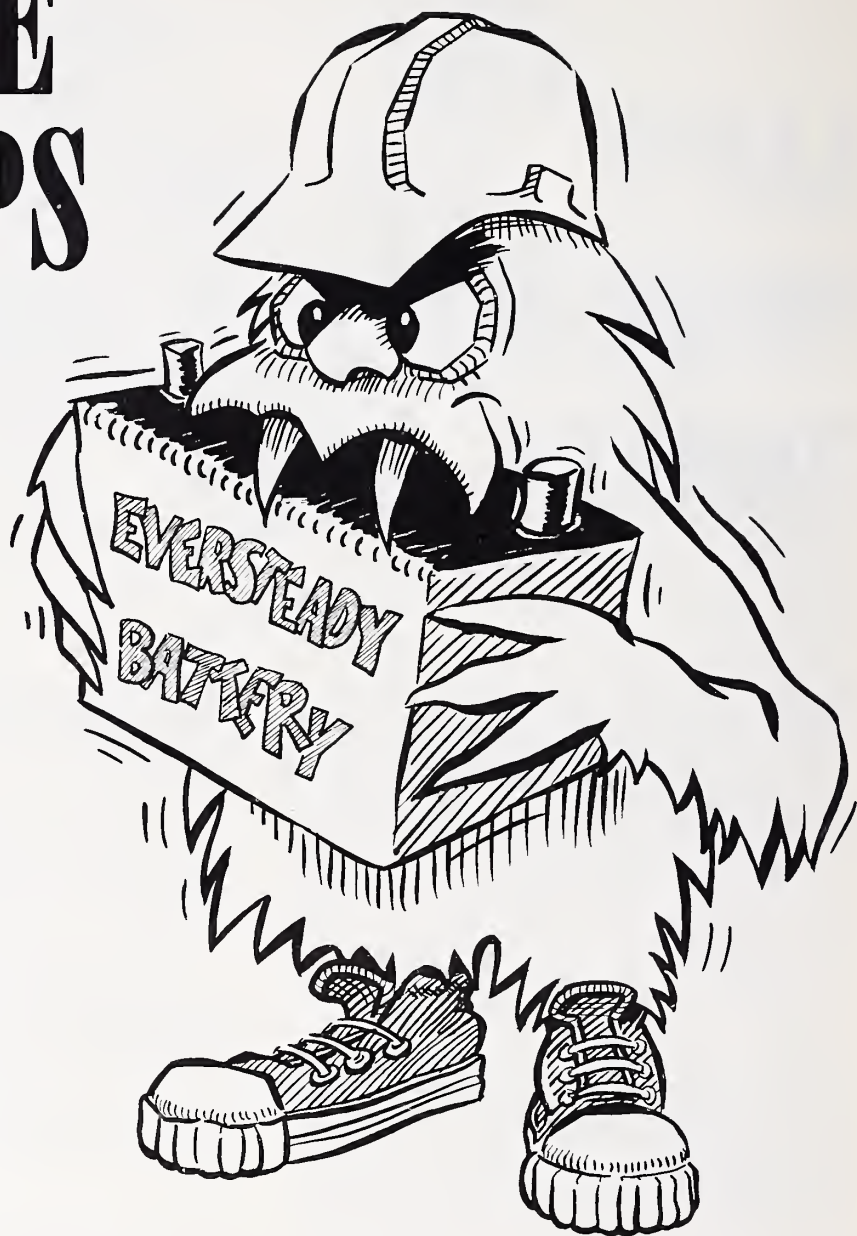
Aircrews should be aware of the bird strike hazard and have a plan of action in the event of an inflight encounter with these large birds. Cockpit penetrations have resulted in personal injury, loss of cockpit communications, serious damage to flight instruments and controllability problems. Consideration should be given to the following items in order to prevent or reduce the damage of bird strikes.

- Lost cockpit communications procedures.
- Flight maneuvers following a bird strike.
- Injury to a crewman (attempt to lock shoulder harnesses to avoid obstructing stick movement).
- Wearing the double visor.
- Recovery procedures.
- Controllability checks for airframe damage.
- Low Level ejection procedures.
- Report bird sightings.
- Always clear; a speck in the sky can become a bloody mess in the cockpit or cause serious structural damage to the aircraft very rapidly, often before the pilot has time to react.

MISSILE MISHAPS

BATTERY CHARGER FAILS . . . AGAIN . . .

The crew at the launch control facility received a launch facility no-go and no VRSA response from the launch facility. An electro-mechanical team was dispatched and found the battery charger output low. The battery charger was removed and replaced, site status returned and the VRSA brought back up. Six launch facility batteries were removed and replaced and returned to the support base where recovery procedures were attempted. All six batteries failed the recovery attempt and were condemned. Cause of the mishap was a failed capacitor in the battery charger. Ogden ALC is presently installing the launch facility motor generator battery charger monitors which will notify the crew of failing battery chargers. This will allow early dispatch of maintenance personnel before the batteries are lost.



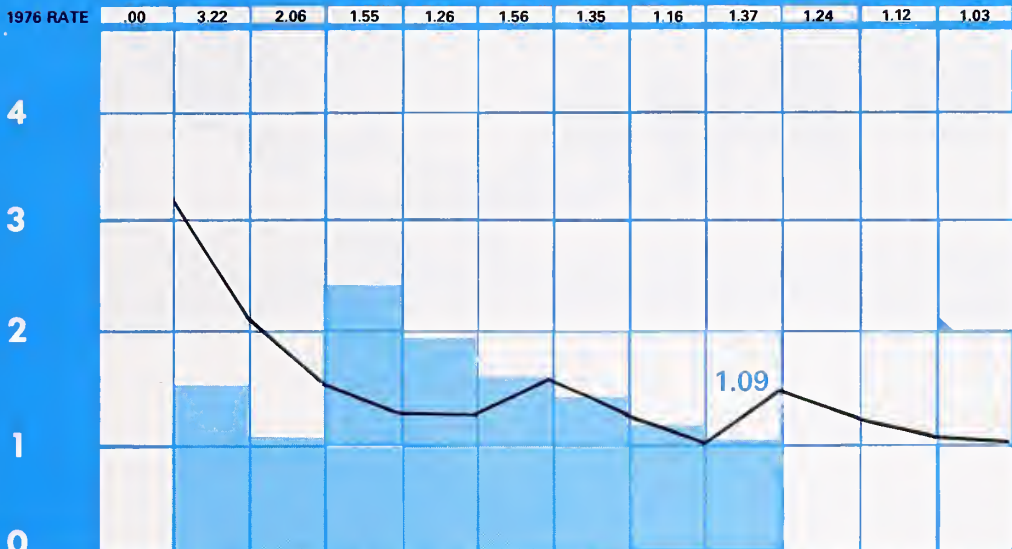
LEAKS AND SWITCHES — A brine leak was discovered and the launch facility (LF) was shut down for repair. Troubleshooting revealed a temporary brine by-pass line had failed between the LF support building and the launcher equipment room (LER). A replacement by-pass line was installed by the electromechanical team (EMT) and it received a valid pressure check after installation. The next day, VRSA channel 23 (equipment cooling air) was received and the LF later went status out. The responding EMT discovered several equipment racks had overheated, the emergency fan switch was in the off

position and brine was on the floor of LER #2. The brine line was eventually repaired and the damaged drawer removed and replaced. Cause of the mishap was failure of the temporary by-pass brine line and personnel error where the first EMT failed to place the emergency fan switch to the ON position when backing out of the site. The emergency fan switch is a special interest item in team training and quality control. The mishap was brought to the attention of all appropriate personnel, reemphasizing the importance of checklist discipline.



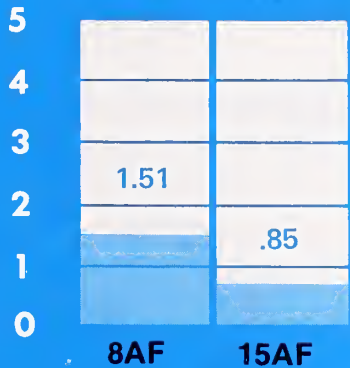
1977 Flying Safety Rate

★ SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	0	2	0	0	0	1	0	0	1	0	0	0
1977	0	1	0	2	0	0	0	0	0			

1977 SUBORDINATE CMD RATES



LEGEND — =1976 RATE

MISHAP STATUS

FB-111	FEB 77
B-52	APR 77
KC-135	APR 77

OPS

HAZARDS



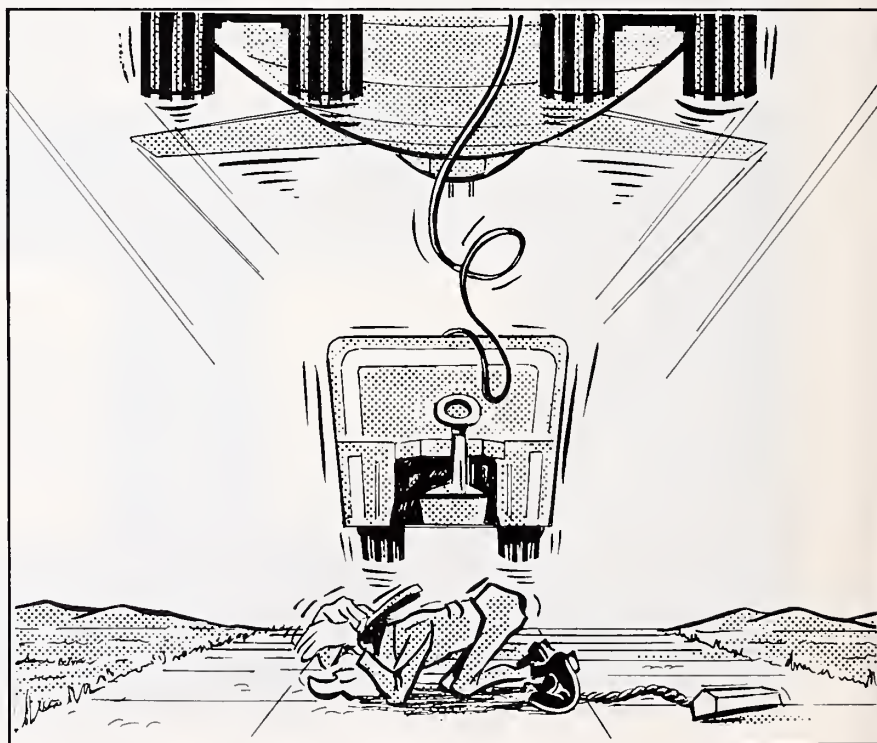
BY THE NUMBERS

During an alert start, the B-52 brakes were inadvertently released and the aircraft rolled forward onto the chocks. After the crew chief directed the pilot to set the brakes, he attempted to free the chocks from under the tires. The crew chief was having difficulty removing the chocks when the pilot directed that the chocks be removed and the interphone disconnected. The order, however, was not acknowledged by the crew chief. Neither pilot could visually locate the crew chief or get a response on interphone. After approximately 30 seconds, the chocks were freed and the crew chief proceeded to the left wing tip.

The OMS alert supervisor then noticed that the MD-3 power cord was still connected to the aircraft. The supervisor started running toward the aircraft while attempting to signal the pilot to stop. The pilot misinterpreted the supervisor's signal to mean that the aircraft was clear to taxi. The crew chief was also attempting to signal the pilot to stop, but he was too far behind the aircraft to get the pilot's attention. As the aircraft taxied, the power cord was pulled out of the

receptacle and the power control door on the MD-3 was torn off the power cart. In addition, the power cord was severed when it reached its full extension.

During the heat of battle, each member of the launch team should know exactly what the other is doing and all procedures should be accomplished "by the numbers."



CAUSES OF AIRCRAFT TAXI MISHAPS

The Air Force suffers dozens of aircraft ground mishaps each year which, although not normally as spectacular or costly as flight mishaps on an individual basis, nevertheless cause millions of dollars in damages and can seriously impact mission capability.

Since Calendar Year 1970, there have been more than 600 mishaps involving improper aircraft ground operation at a cost of \$47 million! Taxiing mishaps accounted for fully one-third of the aircraft ground mishaps experienced by the Air Force during the period 1970-April 1977.

The causes of most taxi mishaps fall within the broad categories of operations, maintenance, and airfield. Typical findings within these categories are:

Operations

- Taxiing too fast for existing conditions.
- Failure to maintain sufficient clearance to avoid an obstacle or another aircraft.
- Failure to use wing walkers (AFR 60-11).
- Improper braking technique.
- Taxiing off paved surfaces.
- Use of excessive power while taxiing.

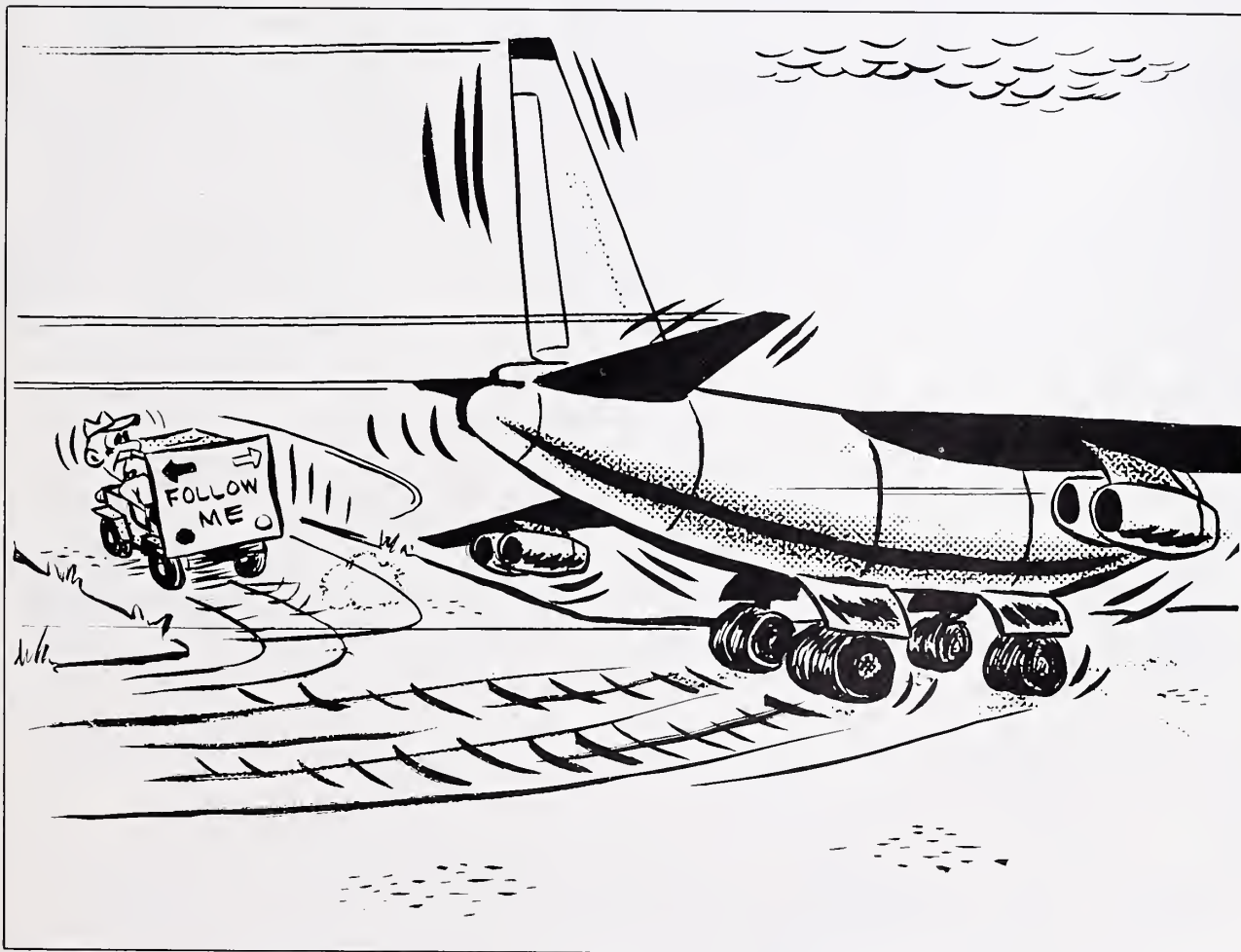
Maintenance

- Parking aerospace ground equipment (AGE) too close to aircraft.
- Failure to warn the aircrew of insufficient clearance in time to avoid a collision.
- Leaving AGE and other vehicles unattended on an approved taxiway.
- Parking aircraft improperly on the ramp.

Airfield

- Aircraft parking spots not marked to allow adequate clearance between aircraft.
- Oversaturated ramp parking areas which create hazardous taxiing conditions.
- Unmarked obstructions on ramp and taxiway areas.
- Taxi reference strips faded or not properly marked to ensure adequate wingtip clearance.

By their very nature, simple, routine tasks seem to breed inattention, complacency, and outright carelessness in the best of us. Only by vigilant supervision and continuous education to increase awareness can we improve the odds. TIG Brief.



PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence outlined in SACR 127-2.

HEADS UP FLYING CLUB — Instructor pilot, Captain Michael W. Mankin, along with his pilot upgrade pilot (PUP), were number three in a three-ship MITO. As the 410,000 pound B-52G became airborne, all engine instruments on number five, six, seven and eight began erratic fluctuations and the oil pressure warning lights also illuminated. Next, number three, five and seven generator circuit breakers popped. Numerous other circuit breakers popped on both the left and right load centrals. After the aircraft was leveled at 1000 feet AGL, the number six fire light illuminated. The throttle was retarded to idle and the light remained steady so the engine was shut down. The number six fire light remained on and the number five throttle was retarded to idle IAW Dash One procedures. At this time the number eight engine fire light illuminated and that throttle was retarded to idle. This was followed by the steady illumination of the number five fire light. Number eight was then shut down. At that moment, number seven fire light started to flicker so that throttle was retarded to idle.

A steady fire light normally dictates the associated engine be shut down, however, the Dash One also states that multiple emergencies may require modification of procedures and that there is no substitute for sound judgment. Capt Mankin elected not to shut down five and seven during this critical point of their flight. This decision was based on their heavy gross weight (410,000 pounds) and the close proximity to the ground (1000 feet AGL).

The aircraft climbed to 6000 feet MSL, an emergency was declared and a Hotel Conference was convened. The problem was identified as a massive bleed air leak. The mission was terminated with an uneventful six-engine landing.

This emergency revealed a significant lack of information in the Dash One concerning airbleed leaks. Hq SAC and CEVG are presently taking action to insure this information is contained in a future revision of the Dash One.

During a critical phase of flight, Capt Mankin expertly handled the numerous emergency situations that confronted him, continued to monitor the PUP actions and insured that positive aircraft control was maintained at all times.



Captain Michael W. Mankin



SSgt. Clarence L. Raynor

HEADS UP FLYING CLUB — SSgt Clarence L. Raynor was called on to help troubleshoot the inflight emergency on Captain Mankin's B-52. SSgt Raynor diagnosed the malfunctions as resulting from an air bleed leak. Through his in-depth knowledge of the aircraft's air conditioning system, he determined the precise position of the leak. The result of his recommended actions removed the air from around the leak and prevented further damage to the aircraft. SSgt Raynor's quick assessment of the problem and timely corrective recommendation prevented the possible loss of a valuable aircraft and crew.



MINUTEMAN Crew E-001, 341 SMW, Malmstrom AFB: MCCC Capt Stuart C. Fitts, and DMCCC 2Lt Robert H. Soucy.



Maintenance Man. Technical Sergeant Caiaphas D. Nunnally, 379 Field Maintenance Squadron, Wurtsmith AFB.



TITAN Crew R-035, 308 SMW, Little Rock AFB: MCCC Capt John M. Gipson, DMCCC Capt Eric L. Stone, MSAT A1C Brad S. Desmore, and MFT A1C Larry C. Nunley.

SUDDENLY IT'S WINTER

WINTER FLYING CHECKLIST

- Are you adequately clothed and equipped for the area in which you are flying in or to?
- Is the aircraft free of frost or snow?
- Are the flight instruments operating properly?
- Do you know the complete anti-icing and de-icing system of the aircraft?
- Do you know how to detect and combat engine icing?
- Do you know what to do when encountering severe icing, freezing rain, and extreme turbulence?
- Do you know the value of in-flight reports of unusual and unfavorable weather conditions, particularly heavy icing and turbulence?
- What is the correct technique for landing, on snow or ice?
- What is the correct technique for the landing roll on snow or ice?
- Are you physically fit?
- Do you understand cold weather survival technique?

SAFE RUNWAYS AND AIRFIELDS

In view of the serious potential for an increase in the number of aircraft mishaps, we must do everything possible now, and in the future, to reduce or eliminate mishaps which can mar SAC's safety record. While operations and air traffic control personnel monitor flight plans and airplanes to avoid mishaps in the air, everything possible must be done on the ground to make this winter's takeoffs and landings as safe as the state of the art permits.

Snow accumulation and ice conditions have in the past contributed to safety hazards which in turn increased mishaps. Aircraft damage and losses have been caused by snowbanks in the overrun or on the side of the runway; ice and snow on airfields also have caused mishaps in other ways.

Such losses can be prevented by commanders who plan early for an effective snow removal program. In addition to providing for peculiar local needs, it is necessary to assure full compliance with all Air Force, SAC and local procedures for snow and ice control because suddenly it's winter.

Continued from page 5

Now that we have taken a quick look at the problems and hazards of winter flying, let us turn to maintenance personnel. How about that anti-icing and de-icing equipment that hasn't been exercised for several months? How about the snow removal equipment for you civil engineer types? It has probably been setting idle for many months. Is it going to be in condition to respond when you need it? Remember, it doesn't take many inches of drifted snow to keep a B-52 on the ground.

If preheating facilities are available, more comfortable conditions exist for all; but snow or ice which is not removed prior to preheating, can find hidden places to settle in and quickly refreeze when subjected to the elements. This could create a more dangerous situation than the original accumulation of ice or snow. In addition, any aircraft that has been preheated has a greater affinity for ice accumulation after it is airborne unless allowed a sufficient cooling time prior to take off.

Isopropyl can be an effective method for removing ice and snow from aircraft surfaces. Manual snow removal from aircraft upper surfaces can also be effective but extreme caution must be used if this technique is used. Another point, a little heat can do wonders for starting a stubborn alternator or hydraulic pack. It makes no difference whether that heat is supplied by being inside a hangar or by portable heating units. Pre-heating of the crew compartments can also prevent frosting of instruments, and engines start much easier when heat is applied.

It hardly seems necessary to remind everyone to reduce taxi speeds and increase interval between aircraft when operating on ice or snow, but, unfortunately, taxi accidents can occur with alarming rapidity. Now is the time for all crews and maintenance personnel to review winter operating procedures. Don't wait for the winter hazards to trip you up so that you wind up as a mishap statistic.

Keep in mind that complete winter weather safety comes from an understanding of the hazards associated with the season and the proper use of applicable tech data. If you follow this lead you can look ahead with confidence and to assured safety when suddenly it's winter.



SAC SAFETY SCREEN

9 SRW, Beale Crew S-34: P Capt David L Dickerson

19 BMW, Robins Crew E-07: P Capt Ronald H Nissing, CP 1Lt Russell E Sypolt Jr, RN Capt John G Bunch, N Capt Rene F Dreiling, EWO Capt Ellwood A Cousin, G A1C Gregory S Fields

19 BMW, Robins Crew E-15: P Capt Thomas M Chester, CP Capt William C North, RN 1Lt Malcolm W Roe, N Capt Michael D Baldwin, EWO Capt Randall E Wright, G Sgt James R Jackson

44 SMW, Ellsworth Crew E-156: MCCC Capt William L Hearn, DMCCC 2Lt Douglas M Wueri

55 SRW, 2ACCS, Offutt Crew E-111: IP Capt Lawrence E Ford, CP 1Lt David F Newell, N Capt James O Wright, BO TSgt Robert W McMullin

68 BMW, Seymour Johnson Crew E-112: P Capt Calvin Banks Jr, CP 1Lt Richard A Shandor, N Capt Thomas J Land, BO A1C William E Ottani

68 BMW, Seymour Johnson Crew R-04: P Capt True E Homan, CP 1Lt Jimmy C Mann, RN Capt Stephen B Cheavens, N Capt Hector M Marquez, EWO 1Lt Richard N Durbin, G SSgt Malcolm K Morris

90 SMW, F E Warren Crew E-143: MCCC Capt Ronald C Gilchrist, DMCCC 1Lt David A Sarver

96 BMW, Dyess Crew E-11: FP Capt Phillip E Litts, CP Capt Robert L Nielsen, CP Capt Peyton Wheeler III, NB Capt Stephen B Green, NN Capt Ronald D Cope, IE 1Lt Doyle C Daughtry, IG Sgt Kenneth L Johnson

101 AREFW (ANG), Bangor IAP: P Maj Greg Bassett, CP 2Lt Al Jenkins, N 1Lt Doug Damon, BO TSgt Tom Pound

134 AREFG (ANG), McGhee Tyson Airport: P Capt Michael J Ray, CP Capt Ralph L McCampbell, CP Capt Thomas H Wright, N Lt Col Henry C Baird Jr, N Maj James L Gober, BO MSgt Ronald K McKinnon

320 BMW, Mather Crew R-15: P Capt Andrew W Smoak, CP 1Lt Kenneth G Schramm, RN Capt Stephen M. Lightner, NN 1Lt William T Horton, EW 1Lt Randolph R Rihner, G SSgt Ray T Zamora

321 SMW, Grand Forks Crew S-130: MCCC Capt William A Allgaier, DMCCC 2Lt Clyde W Rothman

349 AREFS (100 AREFW), Beale Crew E-119Q: P Capt George McAndrews, CP 1Lt Harold Wood, N 2Lt Wayne Harold, BO Sgt Lawrence Frazier

351 SMW, Whiteman Crew E-185: MCCC 1Lt John G Darr, DMCCC 2Lt Walter Koozin

379 BMW, Wurtsmith Crew S-08: IP Capt James M Sullivan, CP 1Lt Michael G Russell, IRN Capt Robert A Hudson, IN 1Lt William B Garner, IEW Capt Kenneth W Bigbee, IS TSgt Raymond J. Grienke

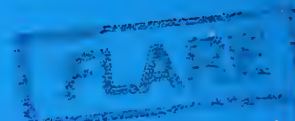
379 BMW, Wurtsmith Crew S-101: FP Capt Gordon J Hill, CP 1Lt John R Boherty, NN Capt James E Rand, BO MSgt Ronald E Fregien

390 SMW, Davis-Monthan Crew E-160: MCCC 1Lt Steven K Yates, DMCCC 2Lt Brian C Weber, MSAT Sgt John M Gallagher, MFT A1C Gerald M Poston



HALL OF FAME

TACTICAL FLYING



OVER TWENTY-ONE YEARS	
170 AREFG, McGuire (NJANG)	NONE
OVER NINETEEN YEARS	
171 AREFW, Greater Pittsburgh (PAANG)	Mar '58
157 AREFG, Pease (NHANG)	Jun '58
97 BMW, Blytheville	Aug '58
OVER EIGHTEEN YEARS	
940 AREFG, Mather (USAFR)	May '59
307 AREFG, Travis	Sep '59
OVER SEVENTEEN YEARS	
19 BMW, Robins	Oct '60
OVER SIXTEEN YEARS	
151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61
134 AREFG, McGhee Tyson (TNANG)	Aug '61
OVER FIFTEEN YEARS	
340 AREFG, Altus	Feb '62
301 AREFW, Rickenbacker	Jul '62
96 BMW, Dyess	Aug '62
OVER TWELVE YEARS	
160 AREFG, Rickenbacker (OHANG)	Dec '64
136 AREFW, Dallas NAS (TXANG)	Jun '65
320 BMW, Mather	Jul '65
OVER ELEVEN YEARS	
452 AREFW, March (USAFR)	Sep '66
OVER TEN YEARS	
92 BMW, Fairchild	Feb '67
55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67
OVER NINE YEARS	
319 BMW, Grand Forks	Dec '67
22 BMW, March	Feb '68
OVER EIGHT YEARS	
5 BMW, Minot	Feb '69
42 BMW, Loring	Sep '69
OVER SEVEN YEARS	
141 AREFW, Fairchild (WAANG)	Oct '69
28 BMW, Ellsworth	May '70
OVER FIVE YEARS	
7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
416 BMW, Griffiss	May '72
305 AREFW, Grissom	Aug '72
OVER FOUR YEARS	
376 SW, Kadena	Nov '72
379 BMW, Wurtsmith	Apr '73

ICBM

OVER THIRTEEN YEARS	
381 SMW, McConnell	Nov '63
90 SMW, F E Warren	Jul '64
1 STRAD, Vandenberg	Sep '64
OVER TWELVE YEARS	
308 SMW, Little Rock	Aug '65
OVER SEVEN YEARS	
341 SMW, Malmstrom	Apr '70
OVER FOUR YEARS	
390 SMW, Davis-Monthan	Jul '73

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.